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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/985,707	11/06/2001	Tadahiro Ohmi	35.C13974 D1	4300

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EXAMINER

MONBLEAU, DAVIENNE N

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 04/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/985,707	OHMI ET AL.	
	Examiner	Art Unit	
	Davienne Monbleau	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.


- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11/6/2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 41-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 41-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

  
**PAUL IP**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 09/425,015.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Specification*

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Laser Gas Supply Path Structure in an Exposure Apparatus".

The phrase "sound speed" is used throughout the specification and in the claims (i.e. page 3 line 21 and page 18 line 20). For clarity purposes, a more accurate phrase would be "speed of sound".

### *Claim Rejections - 35 USC § 112*

Claim 42-44 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. <sup>claim 42</sup> In lines 4-8, the phrase "a gas supply path structure group...connected in series" is vague. It does not clearly define the structure of the apparatus.

Further regarding Claim 43, the method of a device is not germane to the issue of patentability of the device itself, since the device itself obviously uses the method. Therefore the rejection used on the device applies also to the method of the device.

Further regarding Claim 43, it is unclear as to whether this claim is meant to be an independent method claim, or rather a dependent device claim from Claim 41 or 42. Correction is required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krasnov (U.S. Patent No. 6,198,762) in view of Hagiwara (U.S. Patent No. 5,381,210). Krasnov discloses in Figure 1B a laser oscillating apparatus comprising a gas supply structure of a convergent-divergent nozzle type, wherein said gas supply structure comprises a fluid inlet (3a and 1a), a throat portion (1B) for controlling said compressible fluid to a speed less than a sound speed and a fluid outlet (3B and 1c). Krasnov does not teach an exposure apparatus. Hagiwara teaches in Figure 2 an exposure apparatus comprising laser exposure/illuminating light (IL), a first optical system (5) for radiating the illuminating light onto a reticle (2), and a second optical system (3) for radiating the illuminating light onto a surface to be irradiated (4). It would have been obvious to one of ordinary skill in the art to use the laser as a light source for the exposure apparatus taught by Hagiwara, since any suitable laser source may be used.

Claims 42-44, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Krasnov (U.S. Patent No. 6,198,762) in view of Hagiwara (U.S. Patent No. 5,381,210) and Ando et al. (U.S. Patent No. 4,911,805). Regarding Claim 42, Krasnov teaches in Figure 1B a laser oscillating apparatus comprising a gas supply structure of a convergent-divergent nozzle type, wherein said gas supply structure comprises a fluid inlet (3a and 1a), a throat portion (1B) for controlling said compressible fluid to a speed greater than a

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sound speed and a fluid outlet (3B and 1c). Krasnov does not teach a group of path structures connected in a series. Ando et al. teaches in Figure 6D and in column 8 lines 48-60 that at least two path structures, of the convergent-divergent nozzle type with throat portions (2 and 2'), may be connected in series. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a group of path structures connected in series in Krasnov, as taught by Ando et al., to further control and vary the flow velocity of the gas. Krasnov does not teach an exposure apparatus. Hagiwara teaches in Figure 2 an exposure apparatus comprising laser exposure/illuminating light (IL), a first optical system (5) for radiating the illuminating light onto a reticle (2), and a second optical system (3) for radiating the illuminating light onto a surface to be irradiated (4). It would have been obvious to one of ordinary skill in the art to use the laser as a light source for the exposure apparatus taught by Hagiwara, since any suitable laser source may be used.

Regarding Claim 43, Hagiwara teaches in column 1 lines 13-20 a wafer with a photosensitive layer and exposing said wafer. It is standard that the photosensitive layer will be developed after the irradiation.

Regarding Claim 44, Hagiwara teaches in column 1 lines 13-20 that said a semiconductor element is formed on a wafer.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Levatter et al. (U.S. Patent No. 4,005,374) teaches in Figure 2 a gas laser comprising a symmetric convergent-divergent gas supply path structure, temperature controlling means (31, 32, 34 and 35), and blower (28) for circulating said gas. Von Buelow et al. (U.S. Patent No.

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5,206,876) teaches in Figure 1 a gas laser comprising a supersonic nozzle (20), a fluid inlet (22), a nozzle throat (24), a fluid outlet (26) and circulating pump (50). Altmann (U.S. Patent No. 4,413,345) teaches in Figure 1 a gas laser comprising a convergent-divergent nozzle gas supply path structure with a throat portion (2). Azzola et al. (U.S. Patent No. 6,212,211) teach in Figure 3 a shock wave dissipating laser chamber comprising flow guides (107) with openings (114) and a circulation system. Sander et al. (U.S. Patent No. 4,317,087) teach in column 3 lines 58-65 using a bellows pump in a gas laser to circulate the gas medium. Haslund (U.S. Patent No. 4,200,819) teach in Figure 1 a unitary supersonic discharge laser nozzle comprising an inlet (29), a throat portion (27) and an outlet. Bush et al. (U.S. Patent No. 4,319,201) teach in Figure 1 a self-compressing supersonic flow device for a gas laser comprising a throat area (22).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 703-306-5803. The examiner can normally be reached on Mon-Fri 10:00 am to 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

*Davienne Monbleau*

DNM  
April 16, 2002

*Paul Ip*

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